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The Journey to becoming Demand Driven.

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Executive Summary

It is not for the lack of effort that my company, a subsidiary of a listed JSE company and a provider of chemical based products including Coatings, Adhesives, Paint, Industrial, Consumer Care, Food, Mining, Polymers and Water Care to the African market, cannot get our inventories right. No question, our inventory is critical to us. Having the right stock in the right place at the right time at the lowest cost is key to success. But over the years, the right sizing of inventories has really proven to be a challenge.

After 4 attempts with a variety of forecasting/APS solutions spanning almost 2 decades, we never really felt in control despite continued efforts to improve the replenishment signal by 'refining the forecast' and 'optimizing safety stocks' across the network. The standard modus operandi has been that over time, everyone just defaults back to second guessing the recommended MRP calculated orders and manually calculating their orders outside of the system in Excel®. To ensure delivery performance, planners tend to spend most of their time fire-fighting and monitoring inventory from order placement to delivery. Despite their best endeavors, the inventory levels always seem to remain higher than expected and service levels lower than required.

In the beginning

When I started with the company 9½ years ago, each of the business units were at that time operating independently and had its own infrastructure in place. COMPACT was being used as the ERP system with "Inventory Optimiza" (EXECuLINK), implemented way back in 1997, acting as the forecasting solution in some of the business units. I suppose this is where the pursuit for a right planning tool commenced. In 2018, 21 years later, we reflect on the journey and the lessons learnt!

Our first attempt

Around 2007, our parent company embarked on a major ERP rollout: a team of industry experts were recruited and under the guidance of the Financial Director, went to market for a suitable system. The plan was to replace all the legacy ERP systems with a single integrated solution, one with a fully integrated MRP module. A comprehensive set of criteria was drawn up and a new ERP and Forecast system selected. In early 2008, the implementation got underway in earnest and the go-live date was set for October 2009.

The first hurdle was, as always, the master data:

- Numerous data sets had to be consolidated into a single set before it could be loaded into the new system: items, BOMs, customers, vendors, etc.

From a planning point of view, there were other significant challenges too:

- Inventory Optimiza had to be replaced with MRP and the new forecast system. What did not help was at this stage there was not a single planner employed in the company, and hence planning skills and data were as scarce as hens' teeth.

It did not take us long to realise that this new forecasting system was going to be impossible to use. The reasons being were:

- Our company was still in its infancy on the planning journey. All we knew was that we required a forecast by item, by warehouse and by customer, but had little understanding of what this meant for a system, data and process point of view.
- The new forecast tool had all the capability, but it required us to code everything! A task we completely underestimated. Only two part-time technical resources were allocated to assist with data extraction and the development of the forecast.
- And then just as we started to roll the solution out, we discovered that the software was unfortunately only coded to run on a single thread. The result being that as soon as multiple users logged on, the system crashed despite our big investment in a multi-processor server.

After more than 12 months of struggle, the towel was finally thrown in and a full refund was obtained. We were no nearer to a solution for feeding the MRP system with a forecast, and so back to the drawing board in search of a better solution!

If at first you do not succeed, try again

By this time, a cross-business planning function was starting to take shape. So, based on the lessons learnt over the last 12 months, this team drew up a new comprehensive specification document and the search for an alternative system began. Soon, several vendors were presenting a range of solutions, from customised-for-your-business to standard off-the-shelf solutions. After several site visits and interviews, a unanimous choice was made, the deal struck and we were off! Again.

During the selection process, the only functional concern identified with this new package was that we required a 3-dimensional forecast; by item, by warehouse and by customer. The application only catered for 2 dimensions, but we were assured that this could be easily customised within the software.

A team comprising of internal and external resources was formed with the task of implementing the solution as soon as possible. But as soon as we started, it became apparent that our functional requirements exceeded what was standard. Furthermore, the vendor had allocated full time external technical resources to address these issues. After a torrid 18 months period, both parties were becoming increasingly frustrated by the seeming lack of progress on going live. The date seemed to continuously drift out for one reason or another. In the end, when the system crashed with multiple users, we decided to part ways. It turned out that core programs had been *customised*, despite the assurance that they were busy with *configuration*: and there was no easy fix!

The third time should be a charm

You can imagine the scenario now: two failed implementations, an MRP system delivering little value and the increased cost of a team of planners.... business appetite for a 3rd attempt was at an all-time low. This, coupled with an attempt to introduce S&OP really put a strain on things. The Christmas Party was not that merry that year.

The choice was simple: either do a quick in-house development or come up with a very low profile (and cost) solution, yet one that will deliver value. In the end it was felt that we could do a quick in-house development that would serve our immediate needs and provide some breathing space until such time that a proper solution was found and implemented.

A very basic data-gathering solution was developed that could collect forecasts from every salesperson (by item, warehouse and customer), consolidate the numbers and develop a consensus forecast that could then be fed into the MRP system. A BI model was developed to enable visibility and reporting. The objective was to put this temporary solution in place for up to 6 months while a proper solution was investigated and implemented.

In the end, this interim solution lasted more than 2 years but the collation, upkeep and ownership of the system waned over time. Therefore, everyone slowly migrated back to ignoring the recommended MRP calculated orders and manually calculated their orders outside of the system in Excel®.

Then in 2015, a new player appeared in the market, who offered a low-cost cloud-based solution to address the forecast requirement. It was available on a month-by-month rental with no strings attached! What could be easier than this?

When doing the business requirements, there were mixed feelings about 'Our Interim Solution' and 'The Cloud-Based Solution'. In the end, the cheap cloud-based solution won and the exercise of gathering data to feed the model got underway. The good news was that a large chunk of the data gathering work had already been done, so it was more of a refinement that was needed.

To make the forecast process simpler and based on our previous experience, only 2 dimensions were allowed: by item and by warehouse. The customer dimension was discarded, much to the dismay of most people.

Probably the biggest headache of this project was the data management. Try as we might, the length of time taken to obtain data, pass the required CSV files into the cloud, update the system, allow users to enter forecasts and then pass the data back to the ERP solution, meant that it took several days for market-driven forecasts to reflect in the ERP system and to be used in the MRP calculations. This caused a big frustration among users. Coupled with that, although salespeople gave their inputs, these inputs often got "lost" in the bigger scheme of things. Consequently, nobody could be held accountable for the final numbers as we had removed the customer dimension.

To be honest, this solution was doomed from the start.

- After 3 previous attempts, business appetite was low to embrace this new solution.
- As soon as the system started working, sales were complaining that their voice was not being heard. We were continually stocked out on bread-and-butter items and all because their forecasts were not being captured into the MRP system.
- Over the years, people had learnt to bypass the system and had created fictitious warehouses where they could hide the stock reserved for their customers.
- Service levels were at an all-time low, while the amount of slow moving stock continued to increase.

In short: people dragged their feet!

Stop complaining and just carry on

So, after 4 attempts at getting the forecast and MRP working, we felt compelled to do our planning with a half functioning MRP, a semi-implemented forecasting tool, a whole lot of Excel® and our best

endeavors. MRP and Forecasting was just not intended for us, even though we absolutely needed it to forward plan our inventories.

A Career in planning?

One of the key lessons we learnt over the years is that no matter how good or bad the system or data is, people are key. You need people that are trained, empowered, and care about understanding the systems, getting the master data right and ensuring that the inventory is well managed. The right people can do incredible things even without good data and systems. Our darkest days were when we had no planners in the business and just relied on market-facing people to sense demand and place orders. But equally there is nothing more demoralizing for a planner to spend months fighting bad data and poor systems trying to get your inventory right only for a business unit owner to just override their decisions with little science and a whole lot of gut feel.

As a business we had worked hard on having a full complement of good planners across the country; they had a regional responsibility but their main purpose in life was to 'maintain the forecast' and 'update the planning master data'. Very little planning was done and no accountability allocated.

It was obvious to us that with the current state of affairs, planning was not a very appealing career choice and we would not hope to hold onto any good planners for long!

A New Hope

Then at SAPICS in 2015 I attended a presentation by Chad Smith, the co-founder of the Demand Driven Institute in America. Chad and his partner, Carol Ptak, had developed a new concept called DDMRP.

In case you don't know, DDMRP is a method to model, plan, execute and manage supply chains. It combines elements of MRP, DRP, Lean, Theory of Constraints, Six Sigma with some smart new innovations to Position, Protect and Pull inventory through the supply chain. The key to success is positioning the right quantities of stock, called buffers, at strategic positions in the supply chain, called de-coupling points. Inventory is then pulled through the supply chain using these buffers and real demand, as opposed to pushing it through using a forecast.

Having lived through 8 years of trying to get MRP and forecast working, this fresh DDMRP concept appealed to me. To make it work;

- We only need a very simple forecast (ADU) to operate the model and with our background this was extremely enticing.
- We had to use buffers instead of safety stock and this concept just made sense to our business. It seemed to fit.
- The methodology spoke of Six Sigma type run-rate charts which would allow us to assess our ordering decision and hold people accountable for replenishments.

Having come from an era where MRP was the de facto ERP standard and having obtained my CPIM years ago, I believed that despite the shortcoming of forecast-driven MRP that it was the only system... Or was it? I was intrigued, but I still needed convincing.

Then in December of 2015, in a discussion with a colleague who was equally frustrated with our poor planning solutions and processes, we decided to visit ABE Chemicals who had successfully implemented

DDMRP: this would give us an opportunity to discover what the fuss was all about and what we could really expect.

What! EXCEL®?

No question, DDMRP had been successful at ABE Chemicals. Inventories were at an all-time low, service levels at an all-time high and large amounts of cash had been freed up.

However, as with most new methodologies, the technologies had not caught up yet so ABE Chemicals had decided to develop an EXCEL® spreadsheet to run DDMRP. They had looked for both local and international vendors, but were unimpressed with the current solution offerings, particularly in a distribution environment and it did not help that there was no real local support.

As I heard this, my mind quickly parked the solution – there is NO WAY we can run a company of our size and complexity on EXCEL® – we had been there and the risk were just way too high. Even the thought of developing a pilot Excel model was beyond my technical ability and appetite. And so DDMRP was parked, “never to be touched again”.

NEW Financial Director: A Disruption

Then in 2016, a new Financial Director was appointed to the holding company and within a very short space of time, concluded that there had been significant under-investment in the IT infrastructure, including the ERP system and its ongoing development. In terms of capability, the company had fallen far behind, and had to do something quickly. His mandate was simple “we will implement a new ERP system and as the choices were limited for a company our size, we needed to focus on getting a system implemented and not spend time or effort on preparing a comprehensive RFP”.

For the Planning team, it was DECISION TIME. We were given the opportunity to;

- Continue as is; use our current cloud-based planning/forecasting solution, and work hard at solving the integration issues with the new ERP solution; or
- Give DDMRP a try; and as the saying goes, ‘don’t expect a different outcome, if you just continue to do the same thing’?

And so, in November of 2016, we quickly put together a short list of essential requirements outlining what was needed. The requirements list was simple. The solution must;

- Be Certified *as compliant* with Demand Driven Institute
- *Integrate directly* with the new ERP system as standard
- Have sufficient functionality to get it going but with a clear *roadmap* of future developments that we could influence.
- Be supported by a great team with a *can-do attitude*

To speed up the selection process, we decided to use LinkedIn. The Demand Driven Institute are very active on this social media site and we thought, anyone worth their salt would respond. By late December 2016, 3 potential partners had responded. By February 2017, the solution evaluation was

complete, a preferred vendor chosen and a POC proposal hammered out. We presented this to the business and it was approved! We were on our way.

Preparing for a go-live

DDMRP was always going to be a major disruption! The methodology was new. Our people were not trained. Our organisation and processes were not designed around DDMRP and we were not even sure what KPIs we would need across the business. To add to this, at the same time we were implementing a new ERP system. The ERP solution came with a MRP engine but our plan was not to turn on MRP at all. All the works orders, purchase orders and distribution orders would be reviewed and approved within the DDMRP solution and automatically loaded into the new ERP solution as planned orders.

Over the next few months, our plan to get ready was simple.

1. Training - A team of 7 people, mostly planners completed the Demand Driven Planner Training in early April 2017 and a month later we had 6 DDP's in the company, all ready to go!
2. Pilot - We connected the data feeds from our existing cloud-based forecast and MRP solution to our cloud-based DDMRP and now had a pilot system for our planners to compare DDMRP against MRP.
3. Functional review - We contracted the main user from ABE Chemicals into the business for 3 months to assist with functional specifications and the development of our solution roadmap.
4. More Training - We continued with the team's education doing the Demand Driven Leader workshop, but in hindsight, this was a bit early.
5. Roadshow - We embarked on a DDMRP Roadshow to all facilities and presented the new approach and proposed solution to all senior managers.

It was not all plain sailing during this period. The major challenge was finding out quite close to go-live that the company had a new moratorium on cloud-based solutions, and hurriedly, the system had to be retrofitted to serve as an on-premise solution and internal resources now have to take ownership of system uptime.

But we were quite relaxed as the POC system was technically live and running in parallel with the existing forecasting solution. Results were being compared and slowly the planners started to realise the benefits of DDMRP, although mostly, they were still holding their comfy blanket of the existing forecast/planning solution. However, with each passing day the planners were getting more and more confident with this new approach. By the first week of August 2017, we had presented the solution to the main board and were given the green light to adopt DDMRP as our new planning system. We were on the home stretch. The only outstanding action was a little task of connecting the solution to the new ERP solution. Gulp!

The New ERP System

As the ERP go-live date of 16th October 2017 drew nearer – a historic moment for the company - master data was being loaded at a frantic pace. For the past 6 months, we had tried to do all we could to prepare for the go-live. We validated and signed off all the master data. We built the data connectors within the standard functions of the new ERP solution, which was one of our key requirements for the solution. We loaded all the history from our old ERP solution in the new DDMRP Solution because no history was being transferred into the new ERP solution.

On the 16th October it was all hands-on deck as we went live. In record time, we connected the DDMRP solution and by the 23rd October were live and ready to start launching purchase orders, work orders and distribution orders with our new methodology and tools.

Master Data, Master Data, Master Data

It only took us a few hours to discover that there was something wrong with our master data. Initially we thought the standard connectors were faulty, but to our horror, we discovered that an older version of the master data had been loaded and that much of the master data clean-up, which the team had worked so hard on was not included. The assumption is always that everything is under control and that someone else will obviously be doing these basic checks. Right?

Worse still, we discovered that it was not so easy to fix. There was no way to just flick a switch and reload a correct set of data. You can imagine here we are going live with a new planning system using radically different techniques to what everyone was accustomed to, with the typical teething problems experienced in any ERP implementation (which included a WMS implementation, just by the way!), and an incomplete and outdated set of master data was used!

Slowly we chipped away at the issues and by 1 February 2018, had basically sorted out the master data and gotten the ERP sufficiently stable to be able to look ahead and focus on extracting value from the DDMRP solution! After all, that's why we implemented it!

Results to date

In the 2 months we have been 'live', we have seen some improvements in inventory availability, but this has been clouded by all sorts of external events (e.g. excessive port delays in Durban during December 2017 coupled with the sudden and unforeseen closure of many Chinese suppliers, resulting in chronic shortages of many key products.

Change Management

Personally, I am a big fan of DDMRP and think that it is an excellent solution for our business. Now that we have the system in place the bigger challenge is 'change management', from the board room to the shop floor.

Already another 15 users have completed the Demand Driven Planner workshop and are in the process of being certified. We have run an in-house DDBRIX® workshop with some 20 senior managers and are now planning to run this game to over 200 people in the sales, warehouse, distribution and production teams by the end of 2018.

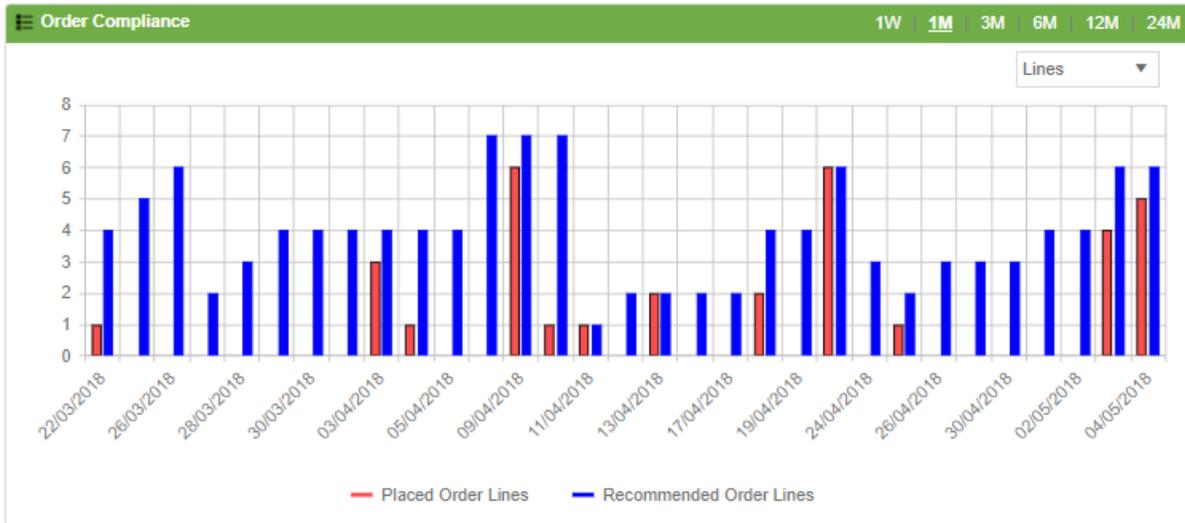
For DDMRP to be inculcated into the business, everyone needs to understand the new rules by which we are playing. Gone are the days of discussion on safety stock or an absolute dependency on forecasts to trigger replenishment orders. Slowly more and more people are getting used to the idea of "Top of Green (TOG)" being good and 'Dark Red (DR)' being a no-no.

One of the biggest gaps developing now (which we were totally aware of and already made known of at the beginning of the project), is the subject of capacity planning. We are rapidly approaching the place where it is vital to understand capacity and to incorporate this into the planning tool.

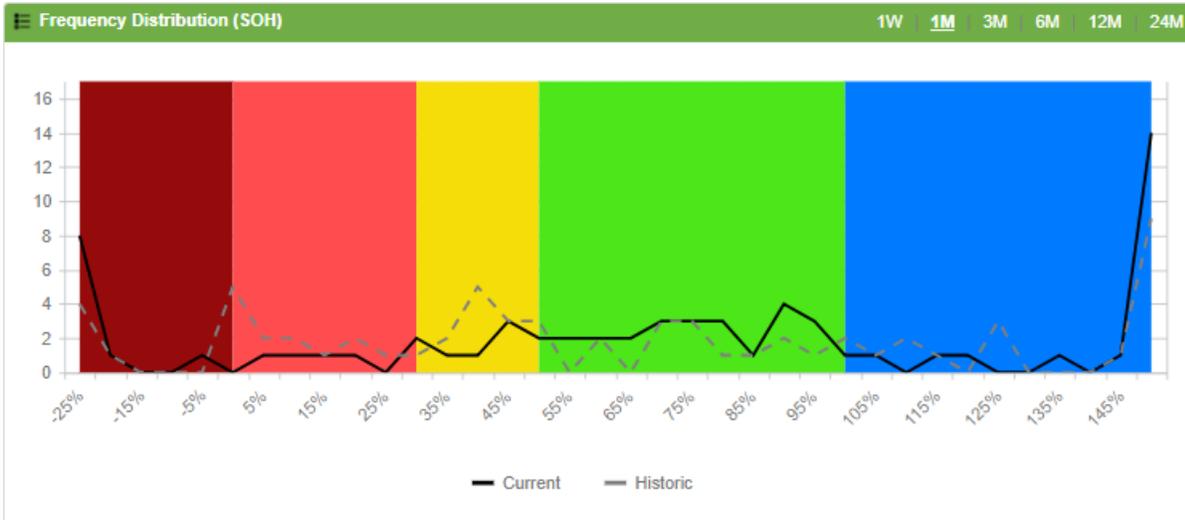
A different set of KPI's

As I said earlier, DDMRP is different and hence, the KPIs are also different. Below, I have added a few of the KPIs I use daily to manage my team and assess performance.

Order Adherence – We can now see exactly what orders were suggested and what were actually placed.



Frequency Distribution – We can now monitor how our inventory is re-aligning over time



These KPIs are standard in the tool and the great thing is there is drill-down capability, so there is no dispute about the accuracy or validity!

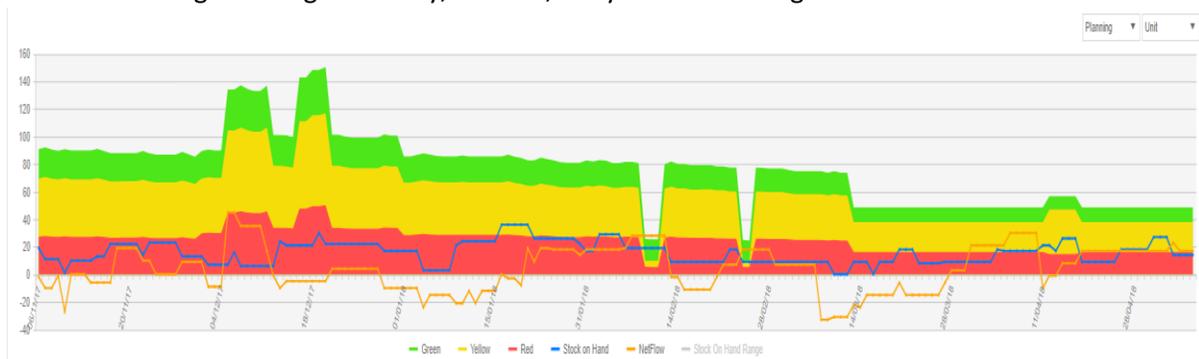
Visual management

Another benefit about DDMRP is that the methodology is very visual. It is often referred to as a Visual Management Methodology. And our tool gives us great visibility. Planners can be held accountable for their portfolios by their Product Manager (or anyone else for that matter)

If an item dipped into yellow, then red and finally dark red, and the replenishment order has still not been released, it makes for some very interesting discussions.

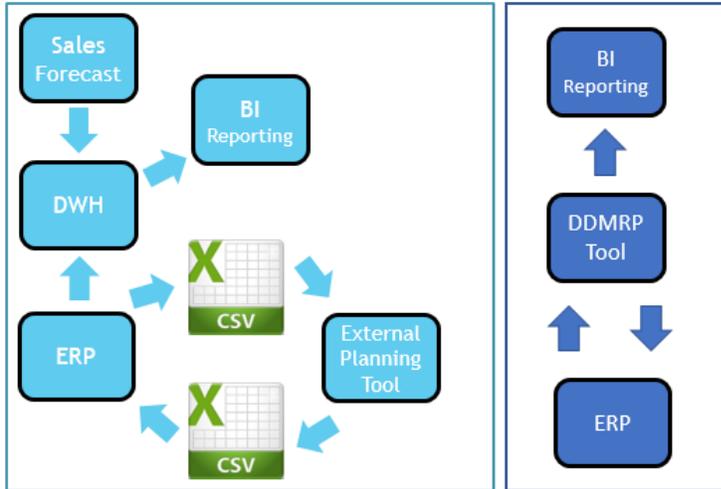
Buffers	Modeling	Order History	
Date	Suggested	Reviewed	Actual
07-May	269	0	0
06-May	270	0	0
05-May	266	0	0
04-May	272	0	0
03-May	262	0	0
02-May	247	0	0
01-May	249	0	0
30-Apr	229	0	0
29-Apr	229	0	0
28-Apr	229	0	0
27-Apr	229	0	0
26-Apr	242	0	0
25-Apr	231	0	0
24-Apr	236	0	0
23-Apr	196	0	0
19-Apr	177	67	0
18-Apr	163	0	0
17-Apr	159	0	0
16-Apr	159	0	233
15-Apr	147	0	0
14-Apr	147	0	0
13-Apr	147	0	0
12-Apr	210	67	268

Other key tools at our disposal is the run-rate chart. In the example below, the item is buffered, yet Net Flow never gets into green. Why, Planner, are you not ordering?



System simplification

The adoption of DDMRP and the fact that the solution is fully integrated into our new ERP system has really simplified the landscape from a technical perspective. This is the graphical representation of what the system architecture looked like in November 2016 and then again in October 2017.



November 2016

October 2017

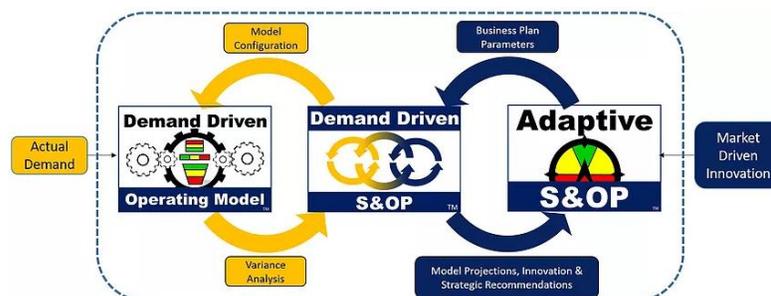
What we now have is seamless integration from the ERP system into DDMRP running once per day and downward integration running back into the ERP for recommended order releases running every 5 minutes!

The Journey Continues...

There is still much to be done, but we believe that the foundation has been laid and that significant benefits will flow in the upcoming months:

- We aim to educate a “critical mass” of employees on the Demand Driven philosophy
- We aim to continue the rollout of critical functionality as defined in the original roadmap to support the business objectives
- We aim to have faster response to SOWDs (stock-outs with demand)
- We aim to pre-empt obsolescence by focussing on the Blue component of the stock profile
- We aim to introduce the Demand Driven Planner certification as a gateway into any position in Supply Chain
- We support the SAPICS initiative of professionalisation of all Supply Chain individuals and are an early adopter of this exciting initiative.

As a business we are adopting the Demand Driven Adaptive Enterprise model (DDAE) as it forms the roadmap of our journey to become fully Demand Driven.



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Ruben Lawrenz has over 30 years' experience in a wide variety of industry verticals, including industrial and consumer packaging, automotive, food and chemicals, where he worked for several multi-national companies in a number of key roles. Having worked as both practitioner and consultant, Ruben can provide an objective perspective of Supply Chain Management. During his career, Ruben gained extensive experience with MRP and Advanced Planning Systems implementations – with first-hand experience of what works and what doesn't! In 2015, Ruben attended a Demand Driven Workshop presented by Chad Smith which led to the current project, where some learnings will be shared. He is APICS certified CPIM and CSCP, and Demand Driven Institute CDDP certified.



Kevin has a degree in Industrial Engineering and 25 years' experience in supply chain planning. Kevin has extensive knowledge of advance supply chain planning tools, business process re-engineering and change management. Kevin is currently based in the UK and has worked with +150 clients globally including ThyssenKrupp Aerospace , BHP Flat Product, Belron, Tesco, EDF Energy, Unicef, DHL, NHS and Kwik-Fit. Kevin currently lectures on Logistics and Operations Management at WMG at Warwick University, UK and Polytech University, Hong Kong. Kevin is a certified DDP Trainer and has spoken at events including the European Supply Chain Summit, Prague and the Supply Chain Event, Paris.